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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,658	06/26/2006	Hiroyuki Morioka	097929096574	5092

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EXAMINER	
POLYANSKY, ALEXANDER	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,658	MORIOKA ET AL.	
	Examiner	Art Unit	
	ALEXANDER POLYANSKY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *3,4 and 7-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 2, 5, and 6 remain for examination where claim 1 has been amended; claims 3, 4, 7-12 have been withdrawn.

Status of Previous Rejections

The 35 U.S.C. 102(b) rejection of claim(s) 1-2 and 6 as being unpatentable over Engler et al., US 5,569,441 has been withdrawn in view of the amended claim 1 filed February 20, 2009.

The 35 U.S.C. 102(b) rejection of claim(s) 1 and 6 as being unpatentable over Arakawa et al., US 2003/0017702 has been withdrawn in view of the amended claim 1 filed February 20, 2009.

The 35 U.S.C. 102(b) rejection of claim(s) 1 and 5 as being unpatentable over Kudome et al., JP 02-252601 has been withdrawn in view of the amended claim 1 filed February 20, 2009.

Examination on the Merits

Claims 1, 2, 5, and 6 are presented for an examination on the merits.

35 USC § 112 Sixth Paragraph

The following is a quotation of the sixth paragraph 35 U.S.C. 112:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claim limitations "means for locally irradiating light…" in claim 1, line 6, and "said local irradiation means has output control means for controlling…" in claim 6, line 2 are expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and as such claims 1 and 6 will be interpreted as invoking 35 U.S.C. 112 sixth paragraph.

If Applicant does not wish to have these claim limitations treated under 35 U.S.C. 112 sixth paragraph, the Applicant is required to amend the claims so that they will clearly not be a means (or step) plus function limitation (e.g., deleting the phrase "means for" or "step for").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gondal et al., US 20050226808 in view of Engler et al., US 5569441.

Regarding claim 1, Gondal teaches an apparatus for taking out hydrogen gas from hydrogen containing fuel fluid (title, abstract) that delineates the recited limitations as follows:

-a catalyst unit (figure 1 and [0034]),

-local irradiation means (title and abstract),

-a hydrogen recovery unit downstream of catalyst unit [0032].

Gondal does not teach a catalyst passage formed in a catalyst unit, because Gondal teaches a batch process. However, Engler teaches an apparatus that contains a catalyst unit (Engler figure 1, col. 1, lines 15-17), irradiation means (Engler fig. 2), and a catalyst passage formed in a catalyst unit (Engler col. 1, lines 15-17) to process hydrogen containing fuel fluid (Engler col. 1, line 24). At the time of the invention it would have been obvious to one of ordinary skill in the art to incorporate the catalyst passage in the apparatus of Gondal in view of the apparatus of Engler (figure 2, and col. 5, lines 49-63). The suggestion or motivation would

have been to make Gondal's process continuous based on the apparatus and process thereof of Engler (figure 2, and col. 5, lines 49-63). See In re Dilnot 138 USPQ 248.

Further regarding the amended limitations (1) **through which said hydrogen-containing fuel fluid passes**, (2) **for locally irradiating light onto said catalyst passage, said local irradiation means effective to activate the catalyst and thereby remove hydrogen gas from said hydrogen-containing fuel fluid**, (3) **effective to separate said hydrogen gas removed from said hydrogen-containing fuel fluid from the remaining hydrogen-containing fuel fluid**, it is the examiner's position that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (MPEP 2114) and, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. See MPEP 2115. Therefore, (1) through which said hydrogen-containing fuel fluid passes, (2) for locally irradiating light onto said catalyst passage, said local irradiation means effective to activate the catalyst and thereby remove hydrogen gas from said hydrogen-containing fuel fluid, (3) effective to separate said hydrogen gas removed from said hydrogen-containing fuel fluid from the remaining hydrogen-containing fuel fluid do not impart patentability because the limitations are drawn to the functions of the apparatus rather than having any structural significance.

Regarding claim 2, Gondal teaches the local irradiation means is a laser (title and abstract).

Regarding claims 5 and 6, the limitations (1) **said local irradiation means has irradiation change means for changing a region where irradiated with light** and (2) **said**

local irradiation means has output control means for controlling an output of light irradiated from said local irradiation means it is the examiner's position that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (MPEP 2114) and, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. See MPEP 2115. Therefore, (1) said local irradiation means has irradiation change means for changing a region where irradiated with light and (2) said local irradiation means has output control means for controlling an output of light irradiated from said local irradiation means do not impart patentability because the limitations are drawn to the functions of the apparatus rather than having any structural significance.

Response to Arguments

Applicant's arguments filed February 20, 2009 have been fully considered, but they are not persuasive.

Arguments are summarized as follows:

(I). Applicants assert that Kudome et al. does not teach or even fairly suggest a hydrogen recovery unit, which separates the hydrogen gas removed from the hydrogen-containing fuel and the remaining hydrogen-containing fuel fluid as required by the claims. As such, Kudome et al. does not teach or even fairly suggest all the required elements of the claims.

(II). Applicants assert that Engler et al. teaches an exothermic reaction, which releases energy in the form of heat. Additionally, Engler et al. does not teach or even fairly suggest the

hydrogen recovery unit as required by the claims. As such, Engler et al. does not teach or even fairly suggest the same elements of the claims.

(III). Applicants assert that Arakawa et al. does not teach or even fairly suggest the removal of hydrogen from a hydrogen-containing fuel or a hydrogen recovery unit, which separates the hydrogen gas removed from the hydrogen-containing fuel and the remaining hydrogen-containing fuel fluid as required by the claims. As such, Arakawa et al. does not teach or even fairly suggest all the required elements of the claims.

Responses to arguments are summarized as follows:

(I). The arguments are moot in view of the withdrawal of Kudome.

(II). Regarding the applicant's arguments over Engler, the examiner's position regarding Engler as a secondary reference is applied to the claimed apparatus in the manner as stated above. In view of this, the Applicant's arguments are moot.

(III). The arguments are moot in view of the withdrawal of Arakawa.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER POLYANSKY whose telephone number is (571)270-5904. The examiner can normally be reached on Monday-Friday, 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-270-6904.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ALEXANDER POLYANSKY/
Examiner, Art Unit 1793

/Roy King/
Supervisory Patent Examiner, Art Unit 1793